

The Double-Orifice Technique in Mitral Valve Repair: 35 Years of History

Pablo Maria Alberto Pomerantzeff,¹  Carlos Manuel de Almeida Brandão,¹ Arlindo Riso,¹ Fabio Biscegli Jatene¹
Instituto do Coração do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo,¹ São Paulo, SP - Brazil

The advantages of mitral valve repair are lower morbidity and mortality, reduced risk of thromboembolism and endocarditis, improved survival, and better preservation of left ventricular function. The most common cause of degenerative mitral regurgitation is a myxomatous valve with segmental prolapse of the posterior leaflet, a lesion that can be corrected by classical techniques such as quadrangular resection, but other lesions may require more complex surgical techniques, for instance, correction of anterior leaflet prolapse or Barlow disease. Mitral valve repair in rheumatic patients is still a challenge.

In December 1984, Adib Domingos Jatene MD, PhD performed the first “duplication of the mitral orifice”, in a female patient with mitral insufficiency due to rupture of anterior leaflet chordae (Figure 1). The technique restored mitral competence by anchoring the free edge of the prolapsing leaflets to the corresponding free edge of the opposing leaflet with a 5-0 polypropylene stitch reinforced with pledgets. The patient presented good immediate and long-term evolution.

In 1998, Maisano et al.,¹ published the technique of “duplication of the mitral orifice”, known as the “edge-to-edge” technique, which had been performed since 1991

according to the authors. Subsequently, Alfieri et al. published the midterm results of this single technique,² showing effectiveness and durability, and the same group recently published the long-term (18 years) results.³

Since 1980, we have been performing mitral valve repair with different techniques, including the “duplication of the mitral orifice”, as published in 1994 by our group,⁴ with good long-term (17 years) results.⁵ We perform this type of mitral valve repair in patients who have a large valve ring so that there is no risk of causing stenosis. Evidently, cusp tissue degeneration must be evaluated in the operative act, as well as the tendinous cords and the papillary muscles, but we must remember that once mitral insufficiency has been corrected, cusp stress is greatly reduced. Another important detail in any mitral valve repair is the analysis of coaptation between the anterior and posterior cusps, using the saline test, injected through the mitral into the left ventricle. When we use the mitral duplication of the mitral orifice, we must verify not only the coaptation in the duplication site, which is obviously good, given that there is a suture between the cusps, but also coaptation throughout the extent of the edge between the anterior and posterior cusps.

Keywords

Mitral Valve/surgery; Heart Valve Diseases/surgery; Morbidity and Mortality; Thromboembolism/prevention and control; Endocarditis/prevention and control.

Mailing Address: Pablo Maria Alberto Pomerantzeff

Instituto do Coração do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo – Av. Doutor Enéas de Carvalho Aguiar, 44. Postal Code 05403000, São Paulo, SP – Brazil

E-mail: dcipablo@incor.usp.br, pablo.pomerantzeff@hotmail.com

Manuscript received February 01, 2021, revised manuscript March 03, 2021, accepted March 03, 2021

DOI: <https://doi.org/10.36660/abc.20210067>

HOSPITAL DAS CLÍNICAS DA Faculdade de Medicina da Universidade de São Paulo		ETIQUETA DE IDENTIFICAÇÃO	
RELATÓRIO DE CIRURGIA PRONTUÁRIO			
Nº DE REGISTRO 5032334	DATA CIRURGIA 04/12/84	NOME DO PACIENTE Prof. Adalberto Jafine	CINZA EVAL 586.124
1º ASSISTENTE Dr. Antônio	2º ASSISTENTE Dr. Glaucio	Nº MATRÍCULA 16.888	Nº MATRÍCULA 16.270
TIPO DE ANESTESIA geral	AGENTE ANESTÉSICO Dr. Maina	HORA DE INÍCIO DA ANESTESIA	HORA DE TÉRMINO DA ANESTESIA
DIAGNÓSTICO PRE-OPERATÓRIO DURA LESÃO MITRAL — 394.2 DIAGNÓSTICO (S) / PÓS-OPERATÓRIO - INSUFICIÊNCIA MITRAL POR ROTURA DE CORDA NO POLÍCETO DEPTER — 424.0			
PROCEDIMENTO (S) CIRÚRGICO (S) - PLÁSTICA DE VALVA MITRAL: DUPLICAÇÃO DE ORELHÃO MITRAL — 32.034.01-0			
ACIDENTE DURANTE ATO CIRÚRGICO <input type="checkbox"/> SIM <input checked="" type="checkbox"/> NÃO			
BÓRAX DE CONSULTA <input type="checkbox"/> SIM <input checked="" type="checkbox"/> NÃO			
ENCAMINHAMENTO IMEDIATO DO PACIENTE APÓS TÉRMINO DO ATO CIRÚRGICO 1 <input type="checkbox"/> ENFERMARIA 2 <input checked="" type="checkbox"/> TERAPIA INTENSIVA 3 <input type="checkbox"/> RESIDÊNCIA 4 <input type="checkbox"/> OUTRO DURANTE ATO CIRÚRGICO			
A QUALIDADE DO PRÓPRIO ATENDIMENTO MÉDICO DEPENDE DIRETAMENTE DA EXATIDÃO DOS DADOS ANTERIORES NESTE DOCUMENTO.			

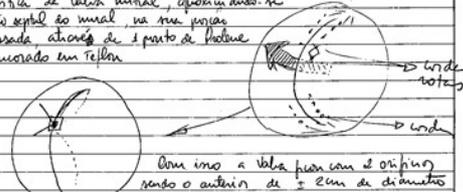
DESCRIÇÃO DA CIRURGIA	
<p>1. Incisão lateral direita no 4º EICE da linha hídica e linha</p> <p>2. Quebra hídica no nível supraumbilical</p> <p>3. Abertura longitudinal do Pleuradio</p> <p>3. Suturas da OEC mediante camadas de Blot Ant-tenuaral D e ambrun ao Corao.</p> <p>4. Equipamento a 32º. Pinçamento de Arta com pinças de compressão por 10s x 16. Tracção da linha Arta</p> <p>5. Abertura do AE. Valva testada com corajá sintético</p> <p>6. Valva hídica: nas condições de sua posição média por palpares ao folheto septal sendo a rotura de corda. Anel hídica de 1º 6cm. Retirar sem lesão</p> <p>6. Fato física de Valva hídica, aproximando-se o folheto septal ao mural, na sua porção posterior através de 1 ponto de sutura e o ancorado em Teflon</p>  <p>Com isso a Valva ficou com 2 orifícios sendo o anterior de 1,2cm de diâmetro</p> <p>7. Teste de Valva com lavagem batendo nos horns para de insuficiência</p> <p>8. Teste de Ar pelo AE e Arta. Despinçamento de Arta. Apertamento</p> <p>9. Fechamento do AE com humbure e O sistema completo</p> <p>10. Saida de OEC com monitoração do AE (± 10mmHg) sem intercorrências</p> <p>11. Rotamun e lavagem de Hemostase</p> <p>12. Preensão do HTD</p> <p>13. Filtro de Trovostome</p>	
DATA 4/12/84	ASSINATURA DO MÉDICO Antônio Jafine

Figure 1 – Surgical report of mitral valve repair with the double-orifice technique.

References

- Maisano F, Torraca L, Oppizzi M, Stefano PL, D'Addario G, La Canna G, et al. The edge-to-edge technique: a simplified method to correct mitral insufficiency. Eur J Cardio-thorac Surg. 1998;13(3):240-6.
- Alfieri O, Maisano F, De Bonis M, Stefano PL, Torraca L, Oppizzi M. The double-orifice technique in mitral valve repair: A simple solution for complex problems. J Thorac Cardiovasc Surg. 2001; 122(4):674-81.
- De Bonis M, Lapenna E, Maisano, F, Barili F, La Canna G, Buzzati N, et al. Long-Term Results (≤ 18 Years) of the Edge-to-Edge Mitral Valve Repair Without Annuloplasty in Degenerative Mitral Regurgitation: Implications for the Percutaneous Approach. Circulation. 2014;130(11 Suppl 1):S19-24.
- Pomerantzeff PMA, Brandão CMA, Monteiro ACM, Nercessian AC, Zeratti AE, Stolf NAG, et al. Mitral valve repair: 12 years experience and evolution of techniques. Braz J Cardiovasc Surg. 1994;9(1):22-8.
- Pomerantzeff PMA, Brandão CMA, Faber CN, Fonseca MH, Puig LB, Grinberg M, et al. Mitral valve repair: seventeen years experience. Braz J Cardiovasc Surg. 1999;14(3):185-90.

